REVIEW OF COMBAT AMMUNITION SYSTEM (CAS) CLASSIFIED DATA HANDLING

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13. ABSTRACT (Maximum 200 Words)

This research study examined the Combat Ammunition System, Base-level (CAS-B). Specifically it addresses issues of the multi-level secure (MLS) designation of the system and the data within the system that requires it to be classified. The issue of classification is traced from development of the system, when it was intended to store data pertaining to nuclear munitions, to current use when no nuclear munitions data is stored. The report explains user problems caused by classification and highlights the fact that only a small fraction of data stored in CAS-B is indeed classified. Although CAS-B was designed and tested as an MLS, able to protect different levels of classified data on individual terminals, the system's MLS features have never been exploited.

The report recommends that the WRM requirements be removed from CAS-B so it can be used as an unclassified system. Until this change is made, it should be used as a multi-level secure system.

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Combat Ammunition System (CAS), classification, multi-level secure, munitions classification, information management

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Executive Summary

Problem:

HQ USAF/LGM representatives believe the current configuration and use of CAS-B as a Secret system is inefficient. The additional requirements created by the classification of the system may be unnecessary. The system was originally designed with the intention of including data for nuclear munitions and was consequently designed as a multi-level secure system. Subsequently, the decision was made to not include nuclear munitions data, but the system was still fielded as a multi-level system. There is a need to clarify what data must actually be protected and to find a better way of operating.

Objective(s):

1. Determine what CAS data is classified. 2. Document whether the current system is multi-level secure. 3. Develop more efficient options to deal with classification requirements.

Analysis/Results:

Data collected in this study showed that only a small fraction of the data currently maintained in CAS-B is classified. This data, which is driving the classification requirements for CAS-B, is not accessed on a regular basis. Furthermore, there is question about whether the data currently classified should remain classified. HQ USAF/XOFW is willing to readdress the classification issue to ensure they are only protecting the visibility of WRM requirements.

Conclusions:

1. Current guidance from XOFW, LGMW and LGX does not agree concerning which data is classified. Once XO makes the appropriate changes to reflect that the only data they categorize as classified is WRM requirements, this must be reflected in all appropriate guidance.

2. CAS-B proved to be multi-level secure in both laboratory and field tests. Testing done by the contractor responsible for CAS security during initial development, and by USAFE during the summer of 1996, showed no classified data was compromised while operating the system as a multi-level secure system.

3. MAJCOMs do not use the WRM requirements data sent forward from CAS-B. The users at CAS-B do not use it either; it is dormant unless a change is made to the WCDO. It does not make sense to include this data, especially if it is the driving force behind classification of the system. If WRM requirements are removed from CAS-B, the entire system can be operated in an unclassified mode.

4. Since there is no need to maintain the classification of CAS-B it should be subsumed by the Integrated Maintenance Data System (IMDS). Resolving this issue now will relieve IMDS developers of the burden of developing a classified system to accommodate CAS-B classification requirements.

Recommendations:

1. As soon as HQ USAF/XOFW makes appropriate changes to guidance, reflecting that only WRM requirements are classified, remove WRM requirements from CAS-B and use it as an unclassified system. (OPR: HQ USAF/XOFW, HQ USAF/LGMW)

2. Until guidance changes, authorize the immediate use of CAS-B as an MLS, by approving direct connection between the mainframe and unclassified terminals as demonstrated in the USAFE test. (OPR: CAS SPO, HQ USAF/LGMW).

3. Reconcile guidance to reflect one standard for munitions classification through a meeting of all key players. This meeting must include HQ USAF/LGMW, HQ USAF/XOFW, HQ USAF/LGX and the CAS SPO. (OPR: HQ USAF/LGMW).

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CHAPTER 1

INTRODUCTION

BACKGROUND

The Combat Ammunition System (CAS) is the data system used to manage Air Force munitions. It contains inventory levels, condition codes, base requirements, requisition information and other critical data for the management of the Air Force ammunition inventory. The system is comprised of four subsystems: CAS-B is the base level system, CAS-C is the command-level system, CAS-A is the wholesale level system, and CAS-D is the deployable system. This report focuses only on CAS-B.

The issue of classification has been a concern since the initial discussions of CAS design. The munitions community originally intended to use CAS to manage nuclear munitions as well as conventional munitions. For this reason they were interested in developing a Multi-level Secure (MLS) system capable of handling both classified and unclassified data. Prior to the creation of CAS, all munitions data was captured in the Standard Base Supply System (SBSS). SBSS was, and is, an unclassified system. According to a representative of HQ USAF/XO, which is the office for classification authority for munitions data, the XO community was never comfortable with all the data that was unprotected in SBSS, but prior to CAS never had an alternative. During CAS design, the XO community stated they would support the creation of a separate data system for munitions if it meant certain data would be classified. They saw the development of CAS as an opportunity to classify some munitions data. However, when the munitions community decided not to incorporate data pertaining to nuclear munitions, they then had a system which was considered classified despite the fact that it contained the same data previously captured in the unclassified SBSS.

Since its implementation in the field, CAS has been used as a Secret system. Users and HQ USAF/LGM requested the AFLMA examine the issue to determine whether CAS-B contains data which truly needs to be classified and whether the system is being used in the most efficient way possible under necessary classification. Researching justification for classification of the system was made more relevant by the release of Executive Order 12958 which reversed the traditional convention of defaulting to the highest possible classification of data. This new guidance dictates that when there is doubt about whether something should be classified it should not.

PROBLEM STATEMENT

HQ USAF/LGM representatives believe the current configuration and use of CAS-B as a Secret system is inefficient.

STUDY OBJECTIVES

1) Determine what data is classified. 2) Document whether the current system is multi-level secure. 3) Develop more efficient options to deal with classification requirements.

CHAPTER 2

DISCUSSION

METHODOLOGY

As part of the preliminary analysis, we collected data to determine whether the classification of CAS-B was actually a problem. Members of the munitions community gave their input through several means. Some were interviewed in the field during site visits, some gave inputs through their MAJCOM representatives and some gave direct feedback via e-mail. We also worked closely with the CAS System Program Office (SPO) throughout the research.

In order to determine what data drives the classification of CAS-B, we consulted the Munitions Classification Guide, a HQ USAF/LGMW publication, coordinated through HQ USAF/XO. We gathered various correspondence and interviewed personnel from both these offices and the SPO. We also reviewed AFI 25-101, published by HQ USAF/LGX, covering the War Reserve Materiel program, and Executive Order 12958-Classified National Security Information.

Determination of the multi-level secure (MLS) system status was done through personal interviews with members of the CAS SPO. The technical and functional experts at the SPO were able to explain the background leading up to the current system configuration and use. We also examined a recent USAFE test conducted to confirm that CAS-B can be operated as an MLS.

What problems exist?

When inputs from field level users and MAJCOM representatives were compiled, the problems associated with CAS-B classification ultimately fell into four categories: hardware, software, speed and accuracy of interfaces, and future systems development.

Hardware

The hardware issues pertain to inconveniences created by the requirement that every terminal located outside the building housing the mainframe be operated through encryption/decryption hardware. This requirement is currently met with either KG-84 encryption devices or STU-IIIs. This requirement creates two problems for the field. First, all field-level units are restricted in their ability to add or move terminals. This restriction is created because the encryption devices must be installed, and the facility must be approved, by communication technicians. The second burden is created by the requirement for encryption devices applied to units that are using KG-84s for that

purpose. KG-84's must be re-keyed daily and, although some units are using over the air re-keying (OTAR), many still have an individual physically re-key each shop's KG-84s each morning.

Software

The main software related problem pertains to report production. Currently, the software in CAS is set so that any report which contains data from certain data sets is automatically marked Secret. There are no logic tables which enable the software to determine whether there is actually classified information in the report. This software feature means man-hours are spent declassifying hundreds of pages of reports which contain no classified data.

Speed and Accuracy of Interfaces

One problem identified by the CAS SPO and CAS-C representatives at the MAJCOMs is complaints about the speed and accuracy of transmission between CAS levels. Under current operation, all CAS-B transmissions are considered classified which limits the lines available for any transmission. According to the technical experts at the CAS SPO, the lines available are limited in number, quality and speed capacity.

Future Systems Development

A far-reaching consideration of the classification of CAS-B is the impact on the interface with, and design of, other logistics information systems. Currently, users must have multiple terminals in the weapons storage area just to meet requirements for data capture. The Core Automated Maintenance System cannot be interfaced with CAS-B because of classification restrictions. The Integrated Maintenance Data System (IMDS) is a major system in development which will be impacted by munitions data classification. The IMDS contract was recently awarded and the system will eventually subsume CAS-B. The functionality of CAS has been identified to be incorporated in the 3rd increment of IMDS, which is scheduled for 1999. Resolving the munitions classification issue will aid in this and other interfacing logistics data systems development.

What data is classified?

The classification of data in CAS is spelled out in the USAF Munitions Classification Guide. This publication is the responsibility of HQ USAF/LGMW, but the actual classification authority is HQ USAF/XO. Reading the guide itself and "clarifying" messages from XO was not sufficient for an outsider to interpret what data was actually intended for protection. A conversation with the XO representative revealed that *any reference to a munition which identifies it as a WRM asset is classified*. In other words, current guidance states that just identifying a bomb as a Category G (the primary category code for WRM munitions) makes the data classified. This does not make sense

and was part of the impetus for AFMC to hold the munitions classification meeting at Eglin to discuss this issue with XOFW.

Munitions Classification Meeting

The Air Force representative for the development of the Ammunitions Standard System (the DoD system in development, intended to replace CAS-A and handle wholesale munitions management for the DoD) recognized the problem with the somewhat ambiguous Air Force guidance and convened a munitions classification meeting from 16-18 September 1996 at Eglin Air Force Base. This meeting was attended by AFMC, ACC, ASC, HQ USAF/LGMW, HQ USAF/XOFW, a member of the AFLMA research team, and other munitions representatives. At the conclusion of the meeting, there was consensus that protecting the identification of assets as WRM assets was not accomplishing what XO intends to protect. XO considers any indication of shortfalls in WRM munitions Secret, so the information they are trying to conceal is the difference between the on-hand quantity and the stated WRM requirements. The XO representative agreed to staff a change to current policy. The new position agreed upon was that only WRM requirements would be classified. By protecting this piece of information, there would be no potential for an intruder to the system to determine whether a base had a shortfall of a particular weapon.

Two specific classification issues were raised during this meeting. Some munitions have uniquely classified data as identified by the individual classification guide for those munitions. For some missiles, the numbers are classified, for others their location is classified. However, this is a very limited population (in USAFE over the past five years there has been one such item), and should not be a driving force behind CAS classification. This information can be kept off-line.

Another concern raised during the meeting was the handling of classified data during contingencies. Some members of the meeting were under the impression that more data is classified during contingencies. The Munitions Classification Guide spells out exactly what information in CAS is classified, and this guide applies to contingency and peacetime conditions. If the change is made to make only WRM requirements classified, this change will apply to peacetime and contingency operations.

Some members of the meeting, including HQ USAF/LGMW and HQ AFMC/ DRW and ASC/WM, still believe there is no need for requirements to be classified because this information creates no discernible threat to the US. They cited Executive Order 12958-Classified National Security Information which says in section 1.2 (b) "If there is significant doubt about the need to classify information, it shall not be classified." They also referred to another section which puts the burden of justifying classification on the classifying authority. The same EO, section 1.2 (a)(4) states one condition that must be met to classify information is that "the original classification authority determines that the unauthorized disclosure of the information reasonably could be expected to result in damage to the national security and the original classification authority is able to identify

or describe the damage." Those who are still interested in challenging the classification are not satisfied that the damage has been identified or described. Since LGMW and others are not satisfied with the classification of WRM requirements they may continue to challenge XOFW as supported by EO 12958, Section 1.9 (a) "Authorized holders of information who, in good faith, believe that its classification status is improper are encouraged and expected to challenge the classification status of the information..."

One further complication in the guidance for classification of CAS data is the fact that the guidance and responsibility for WRM assets falls under the domain of HQ USAF/LGX. This means that AFI 25-101 also dictates WRM policy and Chapter 2 deals with the classification guidance for the WRM program. Currently this chapter in the AFI does not match the current guidance from XO because under the guidance in 2.4.2 there is no requirement that data be classified just because an on-hand quantity was identified as a WRM asset. According to current XO guidance, this is required. The conflicts in guidance between the different Air Staff offices must be resolved in order to develop a system which protects the correct data.

Is CAS a MLS system?

CAS was designed as a multi-level security computer system. The MLS features were tested and certified in 1992. However, CAS-B is essentially operating as a totally classified system. This classified mode incorporates hardware and software setup. Every PC attached to a mainframe is connected through encryption devices, consisting of either two Data STU III's or two KG-84 encryption devices. Even terminals which have been designated for unclassified use only are fed data through encryption. This hardware requirement is the cause of many of the difficulties in the field. The KG-84s require "keying" to make them operational. This means that someone must physically go to each shop with a CAS terminal and key-up the machine each morning. This is a use of manpower that is created solely by the fact that the CAS is not trusted as an MLS system. Considering CAS a completely secret system also puts a burden on the users by restricting the ability to move or add terminals. Many shops have fewer terminals than needed or no terminals because they can't get approval for classified terminals. This is an unnecessary burden since very few of the shops ever need access to classified information, since so few of the supply points have classified data. Out of six sample bases, 10 of 300 supply points are classified. This small percentage of supply points clearly illustrates the over-kill in current terminal configuration. Although only three percent of the supply points include classified data, every terminal must be connected through encryption devices and specifically authorized by communication security technicians. Even the shops which have sufficient terminals are unnecessarily restricted because they can't move terminals without getting permission and assistance from communication security experts.

CAS-B transmissions to CAS-C and CAS-A

CAS software has never been developed to fully exploit the capabilities of multi-level security. Currently all transmissions out of CAS-B are transmitted as classified regardless of the level of classification of the data. This causes problems in transmissions to the higher system levels, both command and wholesale, CAS-C and CAS-A respectively. Making every transmission classified severely limits the lines available for transmission despite the fact that the amount of data which is actually classified is very small. CAS representatives indicated that for the number of classified transmissions required out of CAS-B it would be possible to have one day out of each month when data was transmitted in classified mode. This day would not even be necessary if WRM requirements were removed from CAS-B.

Reports

During development there was an intent to give CAS-B the capability to print classified or unclassified documents, but the security expert at the CAS SPO explained this would only be possible if the software is modified to use logic tables to determine whether there is a combination of data which makes the information classified. If WRM requirements are removed from CAS-B, all documents can be printed in an unclassified mode.

USAFE MLS Test

The CAS representative for USAFE recognized the inefficiency of operating all terminals as classified and proposed a test to determine whether it was possible to use CAS-B as an MLS. The test was authorized by the CAS SPO and HQ USAF/LGMW. Since the test plan was essentially a repeat of the 1992 laboratory test done during development, the CAS security experts considered the risk of compromising sensitive data minute. Consequently, the USAFE test was conducted in the summer of 1996 with live data at Ramstein and Spangdahlem Air Bases in Germany. For the test, terminals were configured to receive only unclassified data and the mainframe was configured to send only unclassified data to those terminals. The terminals were directly connected to the mainframe with no encryption devices. At designated intervals, audits were run to determine whether any classified data was transmitted or received. During the test, there were no compromises of any kind. The test was considered successful and the CAS SPO is considering a request to authorize widespread use of this hardware configuration which makes use of CAS as an MLS system.

EVALUATION OF ALTERNATIVES

Declassification of CAS-B

The first alternative to current CAS-B operation was proposed by many field, MAJCOM and HQ USAF/LGMW munitions personnel. Representatives at all levels proposed that CAS-B should be an unclassified system. This is not a possible alternative under current XO classification guidance, but will be possible under the proposed guidance. Once XO makes guidance changes to reflect their position of only classifying WRM requirements the system can be declassified if WRM requirements are not kept in the system. In the rare case of classification of specific data for individual munitions, the data can be maintained off-line. The WRM requirements data in CAS-B is loaded annually and from the War Consumables Distribution Objective (WCDO). Once the requirements are loaded they are left untouched unless there is a change to the WCDO. The units visited were under the impression that the requirements data had to be in CAS-B in order for MAJCOMs to use the data for requisition and redistribution actions. However, MAJCOMs do not use the numbers from CAS-B to determine course of requisition and redistribution actions. The MAJCOMs use the Non-nuclear Consumables Annual Analysis (NCAA) and the Detailed Logistics Allocation Report (DLAR) for requisition and redistribution actions. Furthermore, The Ammunition Control Point (ACP) does not use the requirements data that flows from CAS-C to CAS-A. Since WRM requirements make up a very small portion of CAS data and the data is not critical to the base level system, nor the command level system, the data can be removed. Once XO makes necessary changes to reflect WRM requirements as the only classified data, the removal of WRM requirements will eliminate the need for classification.

Implement USAFE Test Configuration

A second alternative which could be implemented immediately is the use of CAS as a MLS as demonstrated in the USAFE test. Air Staff and the CAS SPO could authorize all unclassified terminals to be connected directly to the mainframe without encryption devices. This hardware change would eliminate restrictions to adding or moving terminals and would eliminate the necessity to re-key KG-84s on unclassified terminals. This alternative would not cost anything and could save the cost of encryption devices and installation.

CHAPTER 3

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Current guidance from XOFW, LGMW and LGX does not agree concerning which data is classified. Once XO makes the appropriate changes to reflect that the only data they categorize as classified is WRM requirements, this must be reflected in all appropriate guidance.

CAS-B proved to be multi-level secure in both laboratory and field tests. Testing done by the contractor responsible for CAS security during initial development, and by USAFE during the summer of 1996, showed no classified data was compromised while operating the system as a multi-level secure system.

MAJCOMs do not use the WRM requirements data sent forward from CAS-B. The users at CAS-B do not use it either, it is dormant unless a change is made to the WCDO. It does not make sense to include this data, especially if it is the driving force behind classification of the system. If WRM requirements are removed from CAS-B, the entire system can be operated in an unclassified mode.

Since there is no need to maintain the classification of CAS-B it makes sense that its functionality is projected to be subsumed by the Integrated Maintenance Data System (IMDS). Resolving this issue now will relieve IMDS developers of the burden of developing a classified system to accommodate CAS-B classification requirements.

RECOMMENDATIONS

1. As soon as HQ USAF/XOFW makes appropriate changes to guidance, reflecting that only WRM requirements are classified, remove WRM requirements from CAS-B and use it as an unclassified system. (OPR: HQ USAF/XOFW, HQ USAF/LGMW)

2. Until guidance changes, immediately authorize use of CAS-B as an MLS, by approving direct connection between the mainframe and unclassified terminals as demonstrated in the USAFE test. (OPR: CAS SPO, HQ USAF/LGMW).

3. Reconcile guidance to reflect one standard for munitions classification through a meeting of all key players, including HQ USAF/LGMW, HQ USAF/XOFW, HQ USAF/LGX, APGM, WR-ALC/LKG and the CAS SPO. (OPR: HQ USAF/LGMW).

DISTRIBUTION: Refer to attached Standard Form 298.

APPENDIX A
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